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ABSTRACT

This study investigated the effect of being imitated on the behavior of preschool children. Twenty-two children were employed in a "marble game," which consisted of dropping a marble into one of three holes in a wooden box. Procedure trials occurred across four phases in an ABAB design: baseline, imitation, reversal, and imitation again. During the two treatment phases, the subject's responses to a randomly predetermined hole was imitated by an adult. A brief verbal description of the act by the adult accompanied the imitation. Analysis of the subjects' responses by means of an analysis-of-variance model for the intrasubject replication design indicated that imitation of a critical response could function as a positive reinforcer to increase response frequency. (Author/CS)

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IMITATION AS A POSITIVE REINFORCER FOR PRESCHOOLERS

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Many studies have shown that humans can learn and imitate previously observed behaviors (Bandura, 1969; Flanders, 1968). Very little work has been conducted in an effort to discover to what extent, if any imitation can serve as a positive reinforcer. Haugan and McIntire (1972) found that adult imitation of infant vocalizations was more effective than food or tactile stimulation as a positive reinforcer in the conditioning of infant vocalizations. Fouts (1972, 1973) studied the effects of being imitated among children and found evidence to indicate that the imitation of a behavior served to increase the frequency of occurrance of the behavior. The results obtained are somewhat questionable because of the methodology employed. In the first study (Fouts, 1972), comparisons were made between an imitation and nonimitation conditions, but in actuality, the subjects were imitated under both conditions. The second study (Fouts, 1973) had a baseline period during which the subject responded alone on each trial. During the three remaining experimental conditions, both subject and experimenter responded on each trial. This confounding precludes any unequivocal interpretation of the results.

An ABAB design was used in the present study. The question was: If a certain response is continuously followed by another individual's imitation of that response, will the response increase in frequency?

METHOD

Subjects

Twenty-two children (15 boys and 7 girls; mean chronological age = four years, seven months) from a day care center served as subjects (Ss). The Ss were from black and white middle-class socioeconomic backgrounds and were of normal intelligence.

Apparatus

The apparatus consisted of a green wooden box (30 X 30 X 30 cm) with three holes in the top surface. The holes were 1.905 cm in diameter and were spaced 13 cm apart, forming an isosceles triangle. Glass marbles of equal size and color were used.

Procedure

An adult male experimenter (E) escorted the Ss individually to a small room, explaining that they were going to play a marble game. Each S was instructed to take one marble and drop it into any hole that he wished, and that E would then take a marble and drop in into any hole that he wished. The E and S took turns in this manner until E indicated the end of the "game." The instructions and procedure were identical for each S. The responses on each trial were recorded by E.

The first series of 16 trials constituted a baseline phase. The S dropped a marble into one of the holes. The E then dropped a marble into either one of the two holes not selected by S on that particular trial while at the same time saying, "I'll put my marble in this hole." The second series of 16 trials was an imitation phase. The S continued to drop a marble into any hole he wished. For each S one hole was randomly selected (without S's knowledge) as that which would result in imitation by E if S were to drop a marble in it. When S dropped a marble in the designated hole (the critical response), E imitated by placing his marble in the hole and said, "I put my marble in the same hole that you did." This imitation phase was followed by a reversal phase and then an additional imitation phase, for which a hole had again been randomly selected for imitation.

RESULTS

Subjects' critical responses were analyzed by means of an analysis-of-variance model for the intrasubject replication design (Gentile, Roden, & Klein, 1972). Using this model, Ss' critical responses during the baseline and reversal phases were combined and compared with their combined responses during the two imitation phases. In the

present study, this model resulted in two main effects: 1) between-subjects; and 2) between-treatments (baseline and reversal vs. the two imitation phases).

The analysis-of-variance summary table is presented in Table 1.

The between-subjects main effect was not significant.

The between-treatments main effect yielded an $F = 11.45$, $df = 1/44$, $p < .005$ indicating a significantly greater number of critical responses under the imitation treatment, than under the no-imitation (baseline and reversal) treatment. The interaction effect was not significant.

A total of 87 degrees of freedom was computed by subtracting one (1) from the total number of observations included in the data analysis (22 subjects X 4 observations each = 88 observations). The error term was estimated by computing the variance across the two baseline conditions.

The treatment means, standard deviations, as well as the number of critical responses for each S under both treatments are presented in Table 2.

DISCUSSION

The results are consistent with those of other investigators (Fouts, 1972, 1973; Haugan and McIntire, 1972), providing evidence that imitation can function as a positive reinforcer for preadolescents.

Although the between-subjects factor was not statistically significant, one question of interest raised by the present study is why some Ss were not positively reinforced by being imitated. Seven Ss had either a greater, or the same, number of critical responses during the combined baseline and reversal phases, as during the combined imitation phases. There were both boys and girls in this group. Inspection of the protocols of these Ss failed to show any pattern of responding (e.g., a response bias) unique to them. Fouts (1973) found that when preadolescents were aware of being imitated, as was the case in the present study, individuals characterized as "introverts" sharply reduced the incidence of their imitated response.

Research is planned to investigate the relationships between S's age and the effect of being imitated.

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TABLE 1

Analysis of Variance Summary Table

Source of Variation	df	MS	F	p-level
Subjects	21	2.04	1.65	NS
Treatments	1	14.20	11.45	$p < .005$
Subjects X Treatments	21	1.82	1.47	NS
Error	44	1.24		
Total	87			

TABLE 2

Subjects' Critical Responses and Treatment Means and Standard Deviations

	Treatment	
Subjects	Baseline and Reversal	Imitation
1	5.00	6.00
2	5.50	5.50
3	5.50	6.00
4	3.50	4.50
5	6.00	6.50
6	4.50	2.00
7	3.50	7.00
8	5.50	7.00
9	5.00	8.00
10	5.00	6.50
11	5.00	6.50
12	5.50	4.50
13	6.50	6.00
14	5.50	9.50
15	4.50	6.50
16	4.50	6.00
17	3.50	9.00
18	6.00	5.00

19		4.50	4.50
20		5.50	8.50
21		6.50	5.00
22		3.00	4.50
	Mean	4.98	6.11
	Standard Deviation	.95	1.67